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New Records and Redescriptions of some Schött and Womersley Paronellid (Collembola) Species from Australia Including a Key to Genera (Special Papers in Honor of late Professor Ryozo Yoshii)

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## New Records and Redescriptions of some Schött and Womersley Paronellid (Collembola) Species from Australia Including a Key to Genera.

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**ABSTRACT** Nine described species and subspecies of *Paronellides* and *Pseudoparonella* (Paronellidae) from Australia are redescribed and illustrated from topotypical and other material. The presence of colour pattern species of *Paronellides* is noted from Tasmania. A check list of Paronellidae species known from Australia and a key to genera is provided. New records of three species of *Salina* from northern Australia and its off-shore territories are documented.

**KEY WORDS** Collembola / Paronellidae / *Paronellides* / *Pseudoparonella* / Australia

### Introduction

The Paronellidae of Australia were first studied by Schött (1917) and Womersley (1939) in the early part of this century. It is apparent from their work and more recent collections by the senior author that the family is well represented in the more humid, often cooler, parts of Australia as well as the wet tropics. The fauna is not large and at present only five genera are represented. The family is particularly dominant in the cool temperate rainforests of Tasmania, where a diverse range of *Paronellides* Schött species occur (Coy *et al.*, 1993). The wet tropical rainforests of Queensland support species of *Pseudoparonella* Handschin. One species of *Pseudoparonella* is also known from a marine littoral habitat in the far southwest of the continent where a mediterranean climate prevails. In warmer, drier northerly parts of Australia, species of *Metacoelura* Salmon are found living on grasses. New species of troglobitic paronellids have recently been collected from caves on Christmas Island and Tasmania belonging to genera *Cyphoderopsis* Carpenter and a probable new genus near *Trogopedetes* Absolon respectively (Greenslade, unpublished results).

The main part of this paper comprises taxonomic work carried out on Australian paronellids by the junior author when visiting the senior author in Australia for three weeks in early 1991. During this time he redescribed most of Schött's and Womersley's species from recently collected topotypical and other material in collaboration with the senior author. His redescriptions have not been published before.

The characters used in the descriptions are the same as those used in the junior author's previous work on paronellids. Mitra (1993) emphasises the importance of the

head chaetotaxy in his analysis of characters in the family. However our study was completed before Mitra's revision of the family globally at generic level was published so reference to his work has not been made here. As in other groups of entomobryomorphs, the colour pattern of the body is one of the most important characters known at present, although studies of the chaetotaxy of a wider range of genera and species should reveal characters of further significance at this level. In fact in some genera, such as *Paronellides*, the colour pattern is the only character at present by which species can be discriminated and here we note the existence of colour pattern species which were first recorded in faunas from New Caledonia (Yoshii 1989).

Information on number and deposition of types as well as references to the taxonomic and biological literature are given in Greenslade (1994) and are not repeated in this paper. All material examined has been deposited in the Australian National Insect Collection, Canberra, Australia, unless specified otherwise. All measurements and ratios were made on adult specimens only and the figures represent the mean of all adults examined.

**Check list of Australian species of Paronellidae modified from Greenslade (1994).**

*Metacoelura* Salmon, 1951

*Metacoelura articulata articulata* (Schött, 1917)

*Metacoelura articulata semicolor* (Schött, 1917)

*Salina* MacGillivray, 1894

*Salina celebensis* (Schäffer, 1898)

\*Christmas Island, Indian Ocean

*Salina borneensis* Yoshii, 1981

\*Christmas Island, Indian Ocean

*Salina pallens* Yoshii, 1981

\*Cape York Peninsula, Qld; \*Christmas Island, Indian Ocean

*Lepidonella* Yosii, 1960

*Lepidonella tokiokai* Yosii, 1960

Cape York, Qld.

*Paronellides* Schött, 1925

*Paronellides mjoeborgi* (Schött, 1917)

*Paronellides dandenongensis* (Womersley, 1934)

*Paronellides lineatus* (Womersley, 1934)

*Paronellides tasmaniae tasmaniae* (Womersley, 1936)

*Paronellides tasmaniae fasciatus* (Womersley, 1937)

*Paronellides maculatus* (Womersley, 1936)

*Paronellides tristriatus* (Womersley, 1937)

*Paronellides* sp. \*Tas.

*Pseudoparonella* Handschin, 1925

*Pseudoparonella* (*Pseudoparonella*) *appendiculata* (Schött, 1917)

*Pseudoparonella* *halophila* Womersley, 1934

*Pseudoparonella* (*Plumachaetas*) Salmon, 1941

*Pseudoparonella* (*Plumachaetas*) *queenslandica* (Schött, 1917)

### Key to Australian genera

Mitra (1993) provides a key to the tribes and genera of world paronellids based on head chaetotaxy. The key below uses characters that are, for the most part, unambiguous for the non specialist.

1. Scales absent ..... 2  
Scales present ..... 4
2. One large dental appendage present ..... *Salina*  
Dental appendage absent ..... 3
3. Mucro absent or vestigial, pointed ..... *Metacoelura*  
Mucro bidentate, half fused with dens ..... *Paronellides*
4. Scales of the body thin, hyaline ..... *Lepidonella*  
Scales of the body thick, finely striated ..... *Pseudoparonella* 5
5. Basal seta of outer maxillary lobe thick and with a blunt tip  
..... Subgenus *Plumachaetas*  
Basal seta of outer maxillary lobe setaceous, pointed  
..... Subgenus *Pseudoparonella* s.s.

### Species and genus descriptions

#### *Paronellides* Schött, 1925

= *Pericrypta* sensu Womersley, 1934, 1939.

Type species *Pericrypta mjobergi* Schött, 1917

This genus lacks scales as does *Salina* but the genera are not closely related as *Paronellides* lacks frontal spines, has a smooth tenent hair, lacks a dental appendage and has a distinctive pattern of macrochaetae. The macrochaetal pattern is similar to *Corynothrix borealis* (Mari Mutt, 1984) but *Paronellides* is not considered primitive by Mitra (1993). *Paronellides* represents a Gondwanan element of the Australian fauna as

the genus is also found in New Zealand and Brazil where colour patterns are markedly different. The Australian species have been divided into three groups:

- 1) *mjobergi* group with a lanceolate empodial appendage and terminal tubule of the ventral tube with a distinct row of granules;
- 2) *dandenongensis* group with truncate empodial appendage and terminal tubule of the ventral tube without a row of granules;
- 3) *tasmaniae* group, lanceolate empodial appendage and terminal tubule of ventral tube without granules.

***Paronellides mjobergi* (Schött, 1917) Fig. 1.**

*Pericrypta mjobergi* Schött, 1917

*Paronellides mjobergi* (Schött, 1917)

Body length ca. 2.2mm. Ground colour: whitish, with black pigments in patches and stripes; antenna I with one median patch and II with two patches; head dark along the frontal area and with another patch on the vertex; some diffusely dark pigment in other areas; thorax II and III with a paired, broad, longitudinal patch plus a marginal patch on each side of the segment; abdomen I with only a small paired patch on each side, on abdomen II the posterior margin and lateral margin broadly banded; abdomen III with a patch dorsally covering the whole of the segment, posterior extension only lightly pigmented along each margin; abdomen IV with a broad transverse band medially, lateral extension in the form of an H, posterior margin also banded; abdomen V with a pair of patches; legs darkish; ventral part of the abdomen, ventral tube and furca all fairly pale.

Head: labrum with setae 4/5, 5, 4; prelabrals barbed, the median three of the first row slightly longer than the lateral pair; labral margin with only a low, transverse ridge; outer maxillary lobe with setae 2?II+3, proximal setae barbed, basal seta setaceous, papilla very low and not distinct; setae of labial base as MER/LL, R about half the length of M; ocelli 6+6, black, in two longitudinal rows.

Thorax: legs with smallish claw, not elongate unlike *Pseudoparonella sensu stricto*, with minute teeth in the normal form; empodial appendage cuspidate, not truncate; tenent hair weak, apically swollen, not hirsute; trochanteral organ well developed, composed of about 60 slender setulae in a triangular arrangement; ventral tube anteriorly with numerous weak setae, distal ones enlarged; posterior side with a larger number of stronger setae, the distal pair smooth; lateral flap with both smooth and barbed setae; terminal tubules with a row of large granules on the anterior side.

Chaetotaxy: body surface densely covered with slender, barbed setae and associated macrosetae; macrosetae poorly developed and not well chitinised, arrangement

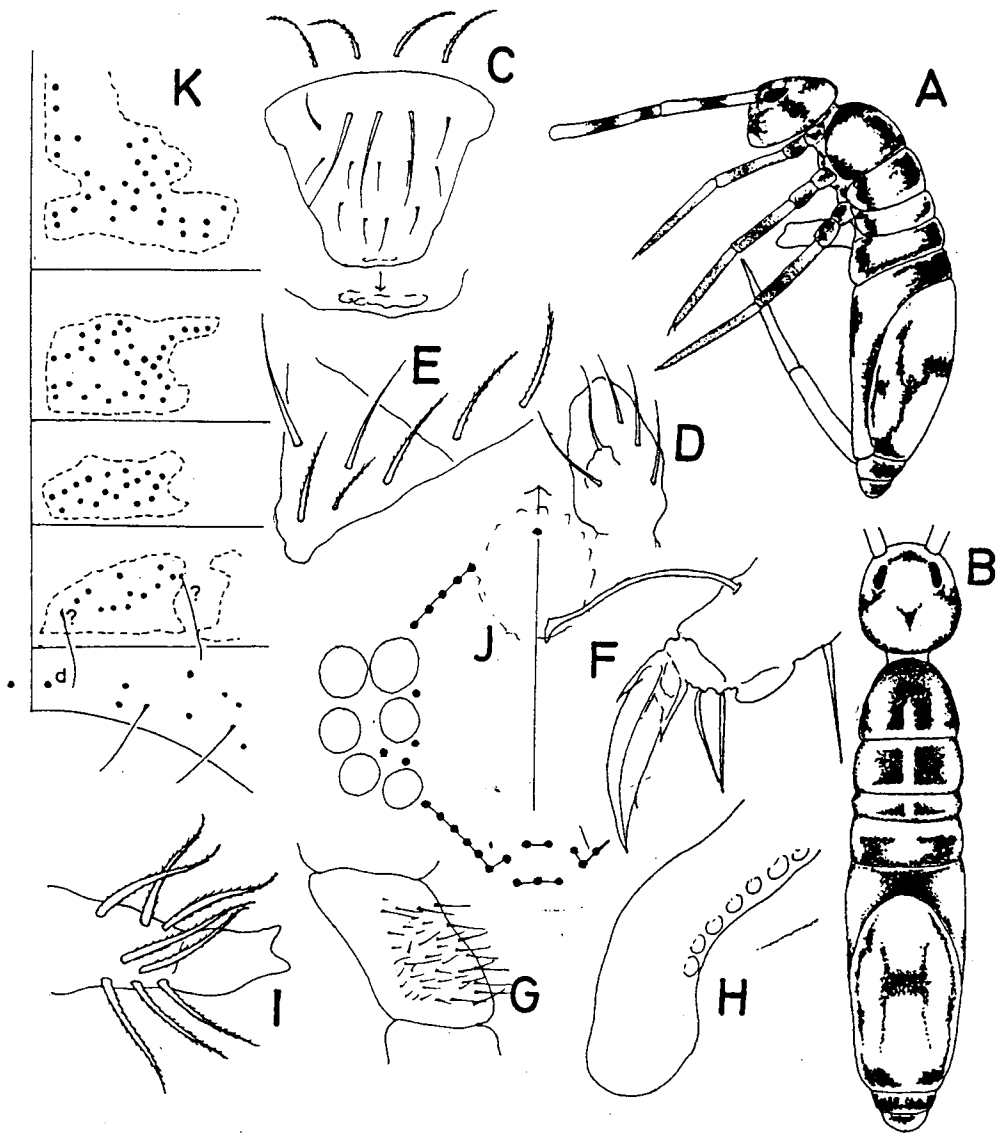


Fig. 1. *Paronellides mjobergi* (Schött): A, B, habitus and colour pattern; C, labrum; D, outer maxillary lobe; E, labial base; F, claw of leg III; G, trochanteral organ; H, terminal tubule; I, mucro; J, dorsal chaetotaxy of head; K, dorsal chaetotaxy of thorax II and III and abdomen I, II and III.

indistinct; head with v group complete, with v-o, v-1 and other normal setae present plus one additional pair anterior to these; no pentagon on frontal area, subantennal setae only present; frontal spine as in *Salina* spp. absent; macrosetae on body numerous but not well developed, arrangement indistinct, mainly concentrated on pigment patches; macrochaetae on abdomen II and III fewer but more than normal for the family; d seta present on abdomen III; abdomen IV without a transverse row of macrosetae.

**Material examined:** Atherton Tableland, Queensland, 5 ex., 12-iii-1988, D. Rentz.

**Remarks:** this species is unique in the genus in having the terminal tubule of the ventral tube with a row of large granules.

***Paronellides dandenongensis* (Womersley, 1934) Fig. 2.**

*Pericrypta dandenongensis* Womersley, 1934

*Paronellides dandenongensis dandenongensis*: Greenslade, 1994.

Body length about 2mm. Colour: ground colour white, deeply banded with black pigments; head with a transverse patch between and near ocelli; body totally black from thorax II to abdomen III, except for posterior extension of abdomen III, but including the base of the legs and ventral tube; abdomen IV often with a lateral, brownish patch, absent in pale form; abdomen V with patches, antennae, legs and furca fairly pale.

Head: antennae as long as the body, antenna:head ratio 19:3, antennal segments ratio 8:14:16:25; antenna IV slightly annulated, without apical bulb, antennal III organ with two slender rods without any accessory structures; antenna I, II with some straight, strong setae; ocelli 6+6, black; labrum with setae 4/5, 5, 4; prelabrals barbed, the median three of the first row much longer than the lateral ones; outer maxillary lobe with setae 2/II+3, proximal setae barbed, basal seta of the papillae slender, without blunt tip; both the papilla and its apical seta obscure, poorly developed; setae of labial basis as MRE/LL, where R is smaller than other setae; ocelli 6+6, on dark black patch.

Thorax: legs with claw of normal form; empodial appendage truncate on inner edge; tenent hair slender, smooth and spatulate distally; tibiotarsus without smooth setae; trochanteral organ with about 30 smooth setulae arranged in a triangular pattern; ventral tube anteriorly with barbed setae, 4+4 very large distal setae, posteriorly with a larger number of longer setae; distal 1+1 setae smooth; lateral flap with both smooth and barbed setae; terminal tubule smooth, never with granulated streak.

Abdomen: furca with manubrium:dens ratio as 3:5 without any modified setae; dorsally dens with strong, straight, slightly spine-like but distinctly ciliated setae on posterior part; mucro bidentate, almost fused with dens.

Chaetotaxy difficult to detect because of variability both in number and arrangement; main differences from *P. mjobergi*: subantennal setae well developed on head; pentagon with L, but f-2 often absent or asymmetric; c-seta always absent, v-group weakly developed, 5-6 pairs in the connecting row, one pair of setae just anterior to v-group;

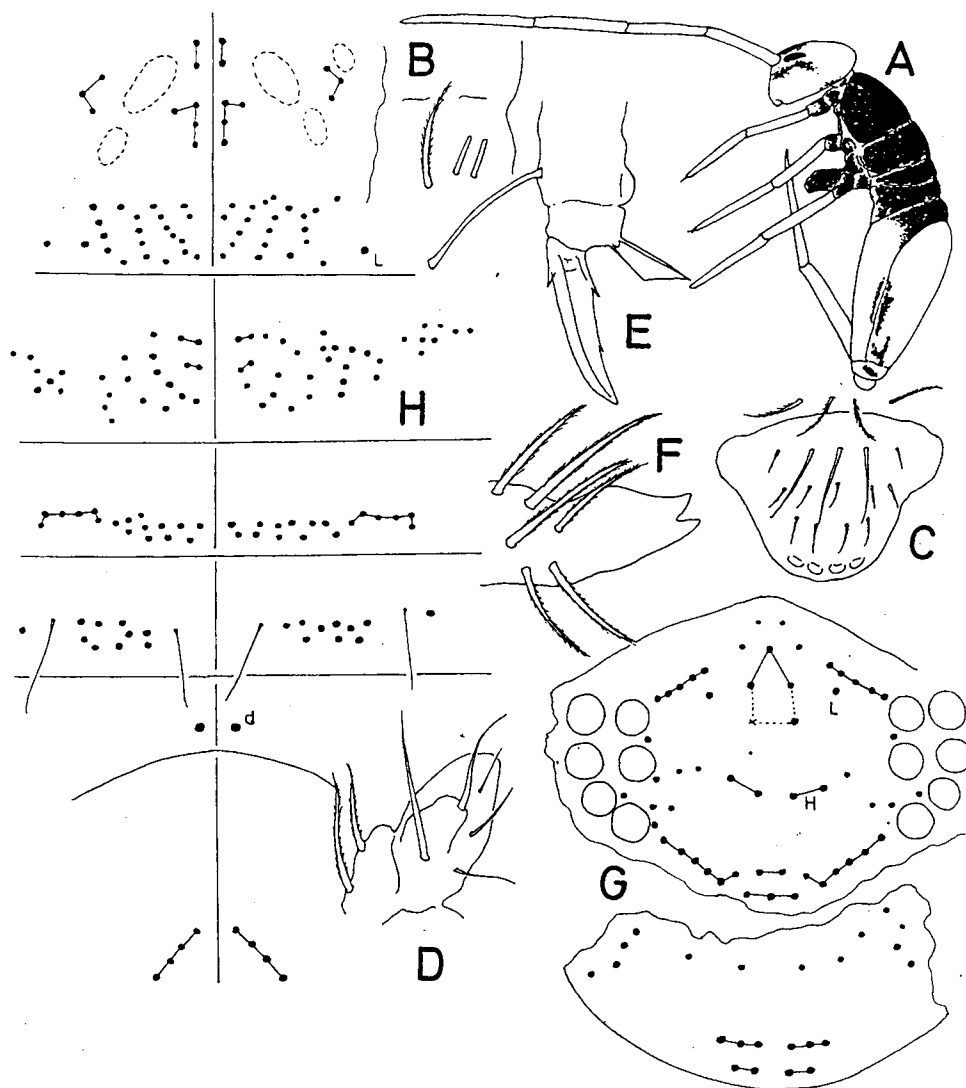


Fig. 2. *Paronellides dandenongenesis* (Womersley): A, habitus and colour pattern; B, antennal III organ; C, labrum; D, outer maxillary lobe; E, claw of leg III; F, mucro; G, chaetotaxy of head; H, dorsal chaetotaxy of thorax II and III and abdomen I, II and part of III and IV.



usually an intermittent row (H ?) between them, but their number and arrangement variable; setae of the posterior half of head also variable, usually as in fig. G; 3+3, 2+2 constant setae just anterior to the cervical margin; cervical setae present in form of long, smooth setae; chaetal pattern on body difficult to observe; posterior group on thorax II almost random, impossible to distinguish but anterior group very constant, composed of 4/3 as in figure; setae of thorax III lacking pattern except for some setae from the lateral group; setae of abdomen I differs from *P. mjobergi* and restricted to the posterior margin of the segment, number of setae variable from 16 to 21 and usually 17; setae of abdomen II constant with s/9/s11, abdomen III always with large d seta; chaetal pattern of abdomen IV again variable, with 4+4 macrosetae on anterior part, in a variable arrangement.

**Material examined:** 20 mile mark, Savage River pipeline road, Tasmania, 10 examples, 21-iv-1989, P. Greenslade.

**Remarks:** In general the species is easily identified by the characteristic colour pattern of the body, and in morphological features it is distinct from *P. mjobergi* in the absence of the granulated streak on the ventral tube, truncate form of empodial appendage and by differences in chaetotaxy.

***Paronellides tasmaniae tasmaniae* (Womersley, 1936) Fig. 3**

*Pericrypta tasmaniae f. principalis* Womersley, 1936

*Paronellides dandenongensis tasmaniae* Greenslade, 1994.

Body length ca. 2.0mm. Colour: ground colour brownish white, with black pigment; head with patches along frontal margin and laterally; thorax II and III with a lateral marginal stripe, continuing to lateral margin of every segment; dorsally a median dorsal stripe from thorax II to abdomen III, including a narrow median paler stripe; abdomen IV posteriorly with a pair of large patches and some weaker longitudinal narrow stripes on the anterior half; abdomen V and VI slightly darkish; antennae with patches distally on each segment; each leg with two distinct bands on the femur and tibiotarsus; ventral tube and furca pale.

Head: ocelli 6+6, heavily pigmented; labrum with setae 4/5, 5, 4, prelabrals barbed, median three of the first two longer than lateral pair; labral margin with 2+2 large tubercles; outer maxillary lobe with setae 2/II+3, proximal setae barbed, basal seta ciliate, papilla rather low and indistinct; setae of labial base MRE/LL, R smaller than M.

Thorax: claw with two inner teeth and a pair of indistinct, small dorsolateral teeth; empodial appendage lanceolate, often with one outer tooth; tenent hair well developed, apically truncate, without smooth setae on hind tibiotarsus.

Abdomen: ventral tube anteriorly with many barbed setae, distal 4+4 setae strongly developed; posteriorly with a larger number of serrated setae and 1+1 distal smooth setae; lateral flap with both longer smooth and shorter barbed setae; furca elongate, with bidentate apex; mucro not clearly separated from dens.

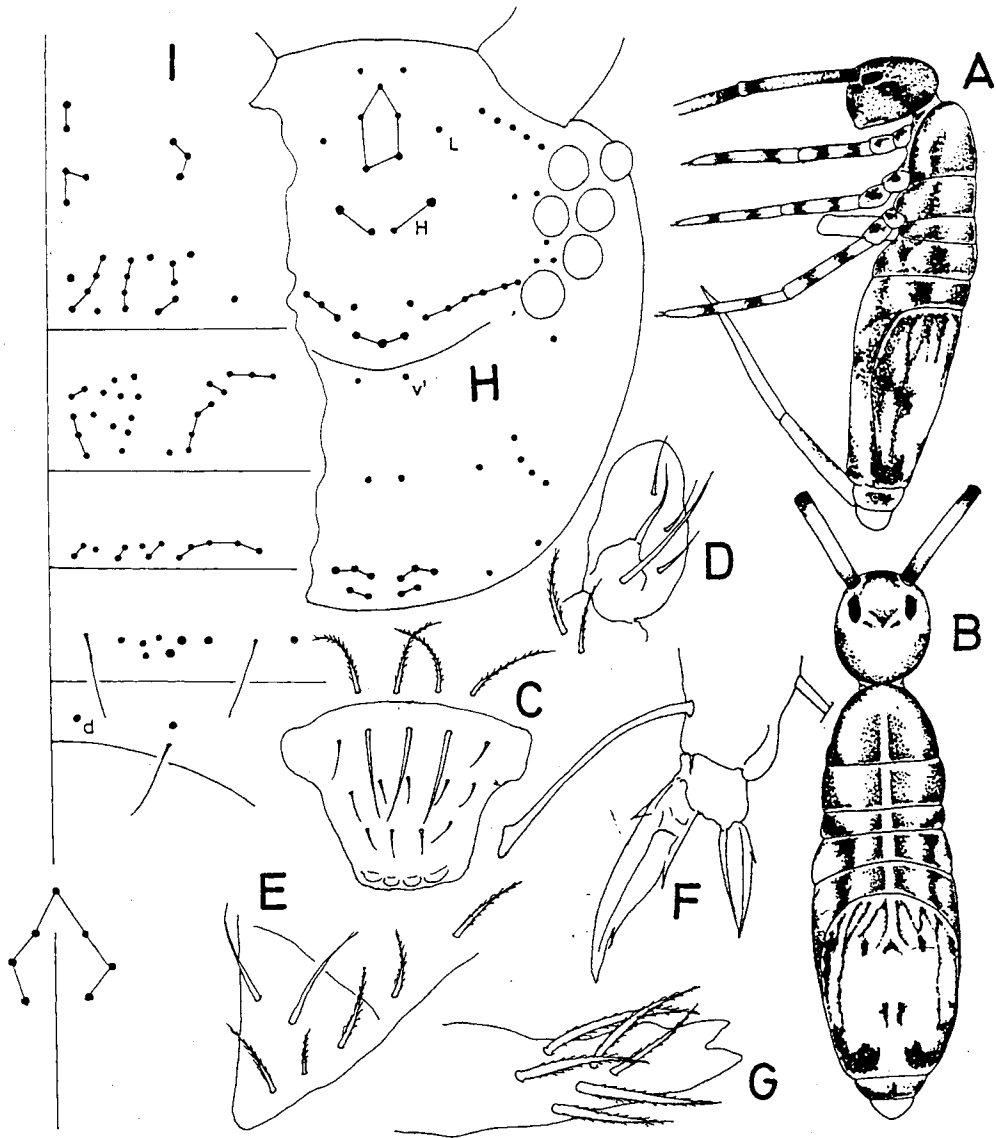


Fig. 3. *Paronellides tasmaniae tasmaniae* (Womersley): A, B, habitus and colour pattern; C, labrum; D, outer maxillary lobe; E, labial base; F, claw of leg III; G, mucro; H, dorsal chaetotaxy of head; I, dorsal chaetotaxy thorax II and III and abdomen I, II and part of III and IV.

Chaetotaxy of the head similar to other species in the genus but without any pairs of setae anterior to v-group, body setae reduced, anterior group on thorax II 3/3 and abdomen II s/7/s/1; arrangement and number of setae of the lateral group on thorax III and abdomen I appear to differ from other species but difficult to determine because of considerable variation in this character.

**Material examined:** Old Farm Road, Mt. Wellington, Tasmania, 5 ex., wet sclerophyll eucalypt forest, 20-vi-1984, P. Greenslade.

**Remarks:** *Paronellides tasmaniae* can be readily distinguished from other species in the genus by its general appearance and by the banded legs. The most diagnostic character is the form of claw and the chaetotaxy of the head, i.e. the absence of pairs of setae anterior to v-group.

When Womersley (1936) described this form, he mislabelled the figures, having transposed the captions for *P. tasmaniae* "*forma principalis*" and "*forma maculata*". It is clear from the written descriptions that Fig. 5a p. 482 (Womersley, 1936), actually represents "*forma maculata*", the paler form, while Fig. 5b p. 482, refers to "*forma principalis*", the darker form. In Womersley (1939) the species is placed in synonymy with *P. maculatus*.

#### ***Paronellides lineatus* (Womersley, 1934) Fig. 4A**

*Pericrypta lineata* Womersley, 1934

*Paronellides dandenongensis lineatus*: Womersley, 1939; Greenslade, 1994.

Colour: ground colour brownish white, with deeper brownish patches; head and anterior half of thorax II dorsally, pale, but with lateral stripes continuing to abdomen IV; a median stripe dorsally from thorax II up to abdomen III, broader posteriorly and having a narrow, median, pale stripe; abdomen IV with a lateral stripe on the posterior half; abdomen V and VI faintly pigmented; antennae and legs brownish.

**Material examined:** Savage River pipeline road, Tasmania, 3 ex., rainforest, 14-20-iv-1989, P. Greenslade.

**Remarks:** The species is easily identified by its colour pattern, having only a mid-dorsal stripe on the body. It is similar to *P. dandenongensis* in the smooth ventral tubule, the truncate empodial appendage and in the chaetotaxy of the head in that there is a paired median seta just anterior to v-group.

#### ***Paronellides maculatus* (Womersley, 1936) Fig. 4B**

*Pericrypta tasmaniae maculata* Womersley 1936

*Pericrypta lineata* v. *maculata*; Womersley 1937

*Paronellides tasmaniae* v. *maculata*; Womersley 1939

*Paronellides dandenongensis maculata*: Greenslade, 1994.

Colour: abdomen almost without dark pigment from thorax II to abdomen II, except for slight, narrow lateral patches; abdomen III with a distinct lateral patch; abdomen IV with a paired patch on the posterior half and some irregular, longitudinal streaks on the anterior half of the segment; abdomen V slightly pigmented; antennae almost pale; legs lightly banded on femur and tibiotarsus.

**Remarks:** All details of the body are similar to *P. tasmaniae* described above, with a lanceolate claw type but the colour pattern differs. This species can be regarded as a colour pattern species of *P. tasmaniae*. Colour pattern species were first proposed for a series of forms which were morphologically identical but with distinctive colour patterns and different distributions on New Caledonia (Yoshii, 1989). Possibly *P. tasmaniae* v. *fasciatus* Womersley, 1936 may be a more deeply coloured example of this species.

The figure captions for this species were transposed with *P. tasmaniae* in the original publication (Womersley, 1936) as noted above under *P. tasmaniae*.

*Paronellides tasmaniae fasciatus* (Womersley, 1936)

*Pericrypta tasmaniae* v. *fasciata* Womersley, 1936.

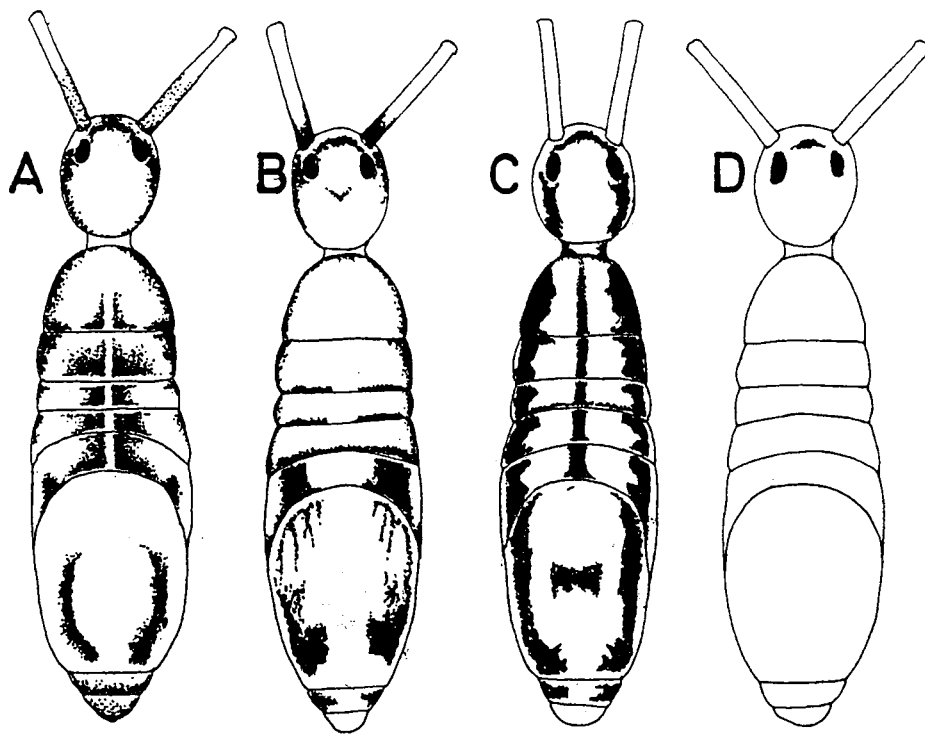


Fig. 4. Dorsal colour pattern of *Paronellides* spp.: A, *Paronellides lineatus* (Womersley); B, *Paronellides maculatus* (Womersley); C, *Paronellides tristriatus* (Womersley); D, *Paronellides* sp.

*Pericrypta lineata v fasciata*: Womersley, 1937

*Paronellides dandenongensis v fasciata*: Womersley, 1939

*Paronellides dandenongensis fasciata*: Greenslade, 1994.

Colour: head and body from thorax II to abdomen III completely black, thorax II and abdomen IV to VI only with faint lateral pigmented steaks or blotches (Womersley, 1936).

**Material examined:** None available

**Remarks:** *Paronellides tasmaniae v fasciata* may be a different, more darkly pigmented "colour pattern" form of *P. tasmaniae*.

***Paronellides tristriatus* (Womersley, 1937) Fig. 4C**

*Ptericrypta lineata v. tristriata* Womersley 1937

*Paronellides dandenongensis v tristriata* Womersley, 1939

*Paronellides dandenongensis tristriata* Greenslade, 1994

Colour: lateral stripes of the body very well developed from the ocelli patch to the lateral margin of abdomen IV; an indefinite, brownish, median stripe dorsally; an additional patch transversely on the posterior half of abdomen IV; antennae are not banded, but each segment of legs banded.

**Material examined:** Savage River, Tasmania; 4 ex. 20-IV-1989, P. Greenslade.

**Remarks:** morphologically these specimens are identical to *P. tasmaniae*, differing only in the colour pattern in having three distinctive black stripes, two lateral and one dorsal. It can therefore be considered as another "colour pattern species".

***Paronellides* sp. Fig. 4 D**

Colour: quite pale, without any sign of pigmented spots except eyes and with a small frontal spot; all appendages usually pale, but sometimes faintly banded.

**Material examined:** Savage River pipeline road, Tasmania; 3 ex. 14-20-iv-1989, P. Greenslade.

**Remarks:** in all details of the body these specimens coincide well with *P. tasmaniae*, having lanceolate type of claw and other morphological details but it differs in colour.

***Pseudoparonella* Handschin, 1925**

Type species: *Paronella appendiculata* Schött, 1917

**Diagnosis:** oval pointed ribbed scales on body; dens with one or two large serrated or barbed spines at tip; mucro with two teeth; ventral tube vesicles with double row of papillae.

**Remarks:** Handschin distinguished this genus from other genera in the family by the small mucro. Two new genera *Microparonella* Carpenter and *Bromacanthus* Schött were later separated from it because they possessed hyaline rather than striated scales, similar to scales of Seirinae and Lepidocyrtinae (Entomobryidae), and macrochaetae are absent from the body. *Handschinella* Yosii, once considered a synonym of *Pseudoparonella*, is now known to be a synonym of *Bromacanthus*.

The genus is limited to Oceania. Two subgenera are currently recognised as indicated in the key above. Salmon's genus *Plumachaetas* was erected in 1951 for a species *Chaetoceras sarasini* Handschin, 1925 from New Caledonia but Yoshii (1980) treats it as a subgenus of *Pseudoparonella*.

The status of *Najtnella* Yoshii, 1989, is still uncertain. It was erected on the presence of long thin setae dorsally on the manubrium as opposed to curved, serrate spines but in this character and in the form of the outer maxillary lobe, it is identical with *Pseudoparonella* (s.str.). *Pseudoparonella* s.str. also differs in the pattern of macrochaetae especially on the vertex of the head and on abdomen I and III and all setae in the first row on the labrum are equal in length in *Najtnella* while in *P.* (*Pseudoparonella*) the inner three setae are about three times as long as the outer ones.

***Pseudoparonella* (*Pseudoparonella*) *appendiculata* (Schött, 1917) Fig. 5.**

*Paronella appendiculata* Schött, 1917

*Pseudoparonella appendiculata*: Greenslade, 1984

Body length ca. 2.0mm. Ground colour light blue with darker patches; antennae darker, with deeper colour on distal part of each segment; head with a frontal patch and one spot on vertex of darker pigment; area posterior to the ocular field is also mottled; thorax II to abdomen II with a broad lateral band; abdomen III with a dorsal transverse band and with a narrow strip on its posterior extension; abdomen IV with a large or small lateral patch medially and a posterior narrow dark transverse band; abdomen V mottled; abdomen VI pale; legs with darker tibiotarsi and darker distally on femur; furca pale.

Head and antennae: antennae scaled dorsally on segments I and II with some enlarged but not particularly elongated setae; labrum with setae arranged 4/5,5,4; prelabral setae barbed, the medial three setae of the first row elongated, much longer than the other setae; outer maxillary lobe with setae as 2/II+3, the proximal two setae barbed; basal seta of the papilla setaceous, slender and without a blunt tip; labial bases with MRE/LL setae where R half the length of the other setae.

Thorax: legs unscaled; claw very slender, with two indistinct inner teeth and a pair of dorsal teeth; empodial appendage also slender, lanceolate and apically pointed; tenent hair slender, shorter than claw and slightly clavate at tip; trochanteral organ well developed, composed of more than 80 microsetae arranged in a quadrilateral field.

Abdomen: ventral tube without scales, anteriorly with some slender, barbed setae,

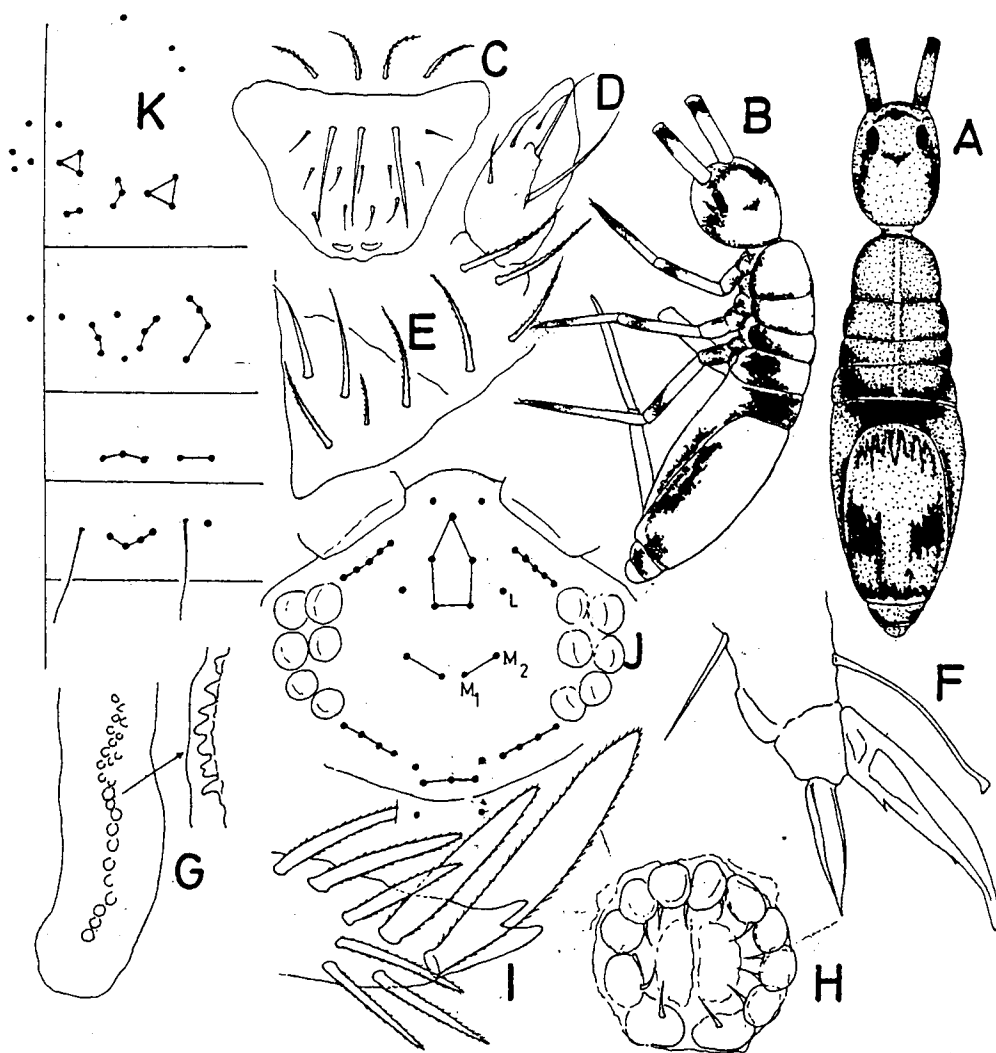


Fig. 5. *Pseudoparonella appendiculata* (Schött): A, habitus and colour pattern (dark form); B, habitus and colour pattern (pale form); C, labrum; D, outer maxillary lobe; E, labial base; F, claw of leg III; G, terminal tubule; H, male genital opening; I, tip of dens and mucro; J, chaetotaxy of head; K, dorsal chaetotaxy of thorax II and III and abdomen I and II.

distal 4+4 enlarged; posteriorly ventral tube densely covered with barbed setae, distal 1+1 setae smooth; lateral flap of ventral tube with both longer, smooth and shorter barbed setae; terminal tubule with a row of large granules; ratio of dens to manubrium as 18:15, manubrium ventrally with elongated scales, distal area with numerous ciliated setae only, dorsally with ciliated setae only and distal area with some elongated setae; dental spines absent but some setae on proximal half of the dorsal side thicker, in addition, the setae larger and thicker distally with the two terminal setae very large and fusiform with some individual variation; mucro small, bidentate and indistinctly separated from dens; genital opening of male typical of circinate type.

**Clothing:** scales of the body small, elongate, brownish and roughly sculptured; scales mask sockets of the macrochaetae; head with a complete pentagon of setae with L, M-1, M-2 but without C-seta; vertical group complete but posterior half with few setae; cervical setae present; chaetotaxy of body shown in Fig. 5; macrochaetae few in number; 5+5 macrochaetae on abdomen I, abdomen II constant with s/4/s/1.

**Material examined:** Atherton Tableland, 1988, D. Rentz.

**Remarks:** this species is recognised by the reduced number of macrochaetae on the body and by the elongate claw as shown in Schott (1917) Figs. 34 and 35.

***Pseudoparonella (Plumachaetas) queenslandica* (Schött, 1917) Fig. 6.**

*Paronella queenslandica* Schött, 1917

*Pseudoparonella queenslandica*: Womersley, 1939; Greenslade, 1994

Body length ca. 3.00mm. Colour: Ground colour whiteish, with many black markings; head with a transverse frontal patch and lighter markings laterally and in facial area; trunk with discontinuous lateral stripe the full length of the body; dorsally, margins of thorax II, III, and abdomen I narrowly banded; a conspicuous patch dorsally on abdomen III with lateral patch either side; abdomen V laterally pigmented; antennae and legs generally darkish with darker pigment distally on each segment particularly femur; ventral tube finely mottled; furca pale.

Head and antennae: antennae very long, longer than body; ratio of antennal segment I to head length is 8:5; antennal segment I scaled dorsally, with some large, straight setae on ventral side; labrum with 4/5,5,4 setae; prelabrals barbed, medial three of the first row larger than others; labral margin without structures; outer maxillary lobe with 2/II+3 setae, proximal two barbed; basal seta of papilla is thick, with blunt tip similar to *Salina* and *Callyntrura*; setae of labial base MMRe/IL, but variable to mMr e/II or Mmre/II (one example); eyes 6+6, intensely pigmented, legs unscaled, with many strong, smooth setae mixed with usual small ciliated setae; unguis slender, with one inner distal and a pair of very small proximal teeth; lateral teeth indistinctly present; empodial appendage lanceolae, acutely pointed and untoothed; tenent hair very long, as long as unguis and apically spatulate; trochanteral organ well developed, composed of more than 100 microsetae arranged in a rectangular field.



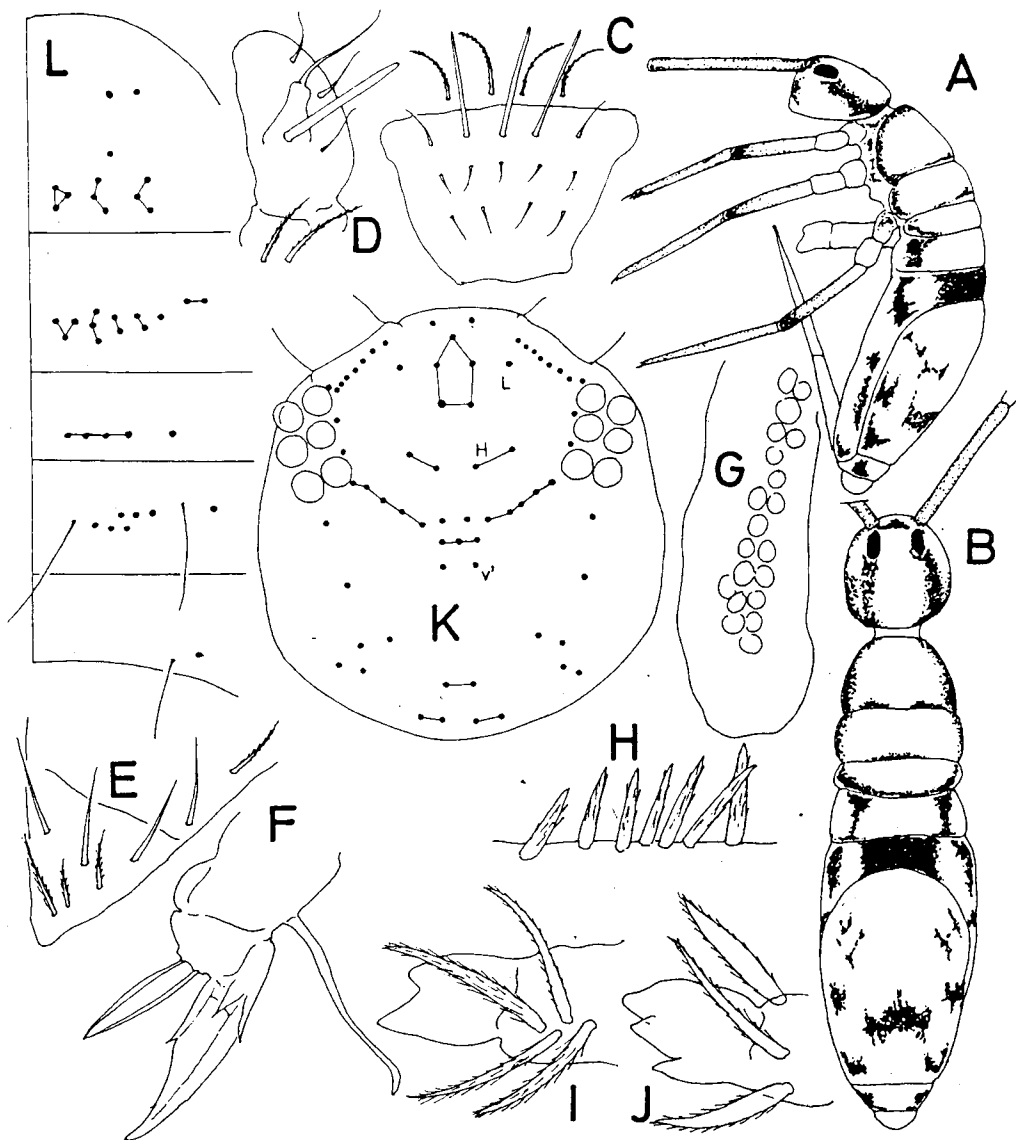


Fig. 6. *Pseudoparonella queenslandica* (Schött): A, B, habitus and colour pattern; C, labrum; D, outer maxillary lobe; E, labial base; F, claw of leg III; G, terminal tubule; H, modified setae of dens; I, J, tip of dens and mucro, two variations; K, dorsal chaetotaxy of head; L, dorsal chaetotaxy of thorax II and abdomen I, II and III.

Abdomen: ventral tube with many ciliated setae, anterior distal 4+4 setae enlarged, posteriorly also with many ciliated setae, with distal 1+1 setae larger and smooth; lateral flap with some large, smooth and smaller ciliated setae; terminal tubule elongate with a row of large granules anteriorly; furca with manubrium/dens ratio of 10:15, ovoid scales ventrally and many barbed setae dorsally, distally longer but not modified near mucro; interiorly dens with some thicker, indistinctly spinulate setae, not particularly strongly chitinated but lightly striated or ciliated; manubrium distally without any special structure but with about 5+5 longer setae; mucro usually bidentate, asymmetrical in shape but often tridentate with an additional tooth.

Chaetotaxy: dorsal chaetotaxy as in Fig. 6K, L; pentagon with L seta and one or two H setae; group of setae on vertex often with a posterior pair of v setae; posterior half of head with fewer macrochaetae and with 1+1/2+2 near the margin; cervical setae existing in the form of smooth setulae often in two rows medially; chaetotaxy of body rather constant as in Fig. 6L; abdomen II with setae s/6/s/l; abdomen IV without d seta; abdomen IV without transverse row of setae and a random arrangement.

**Material examined:** 30 ex, Atherton, Qld, 11-iii-1988, D. Rentz.

**Remarks:** this species is distinguished by the conspicuous transverse band on abdomen III, other markings being somewhat variable, and by the chaetotaxy on the body.

Several other species are similar to *P. queenslandica* of which topotypical or type material should be compared with *P. queenslandica*. They are *Paronella dahliei* Schäffer, 1898 from New Britain, *P. dahliei* var. *tamarensis* Schött, 1901 from New Guinea, *P. insularis* Uchida, 1944 from Micronesia and *Pseudoparonella oceanica* Yoshii, 1989 from New Caledonia.

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